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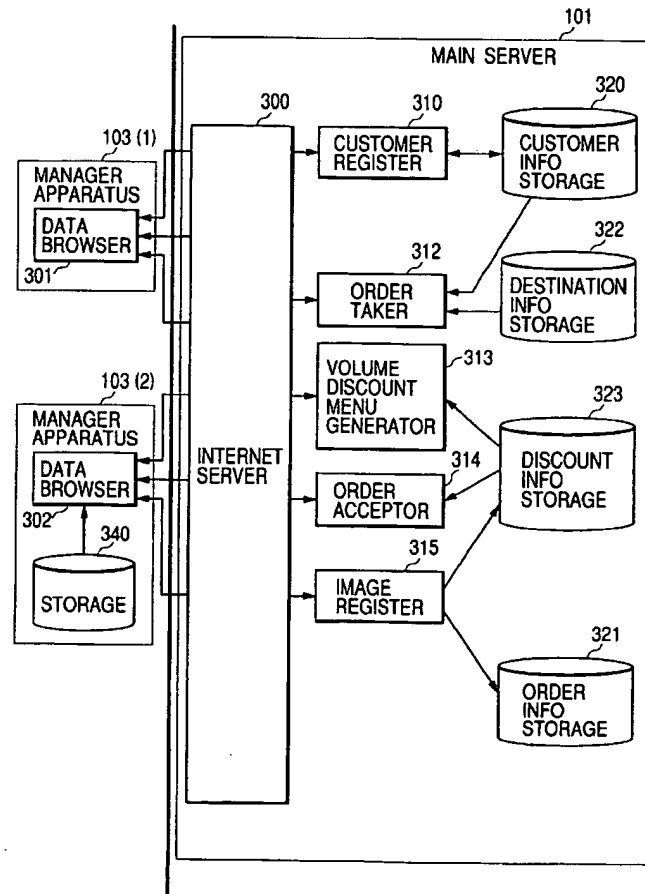
(19) **United States**(12) **Patent Application Publication**
Okazawa(10) **Pub. No.: US 2002/0002492 A1**(43) **Pub. Date: Jan. 3, 2002**(54) **SERVER APPARATUS, DATA PROCESSING
APPARATUS, CONSUMABLE
MANAGEMENT METHOD, AND MEMORY
MEDIUM AND PROGRAM THEREFOR****Publication Classification**(51) **Int. Cl.⁷ G06F 17/60**(52) **U.S. Cl. 705/14**(76) **Inventor: Shinji Okazawa, Tokyo (JP)****Correspondence Address:****FITZPATRICK CELLA HARPER & SCINTO
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NEW YORK, NY 10112 (US)**(21) **Appl. No.: 09/851,560**(22) **Filed: May 10, 2001**(30) **Foreign Application Priority Data**

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(57) **ABSTRACT**

The invention provides a server for managing, for each user, purchase result, replacement result and frequency of use of a consumable used in an office equipment, and capable, in managing the purchase result of the user, of providing a system of managing the kind and the amount of the consumable in detail and providing a discount service for the purchase of the consumable different for each user according to the managed information, or a system of managing the state of use of the consumable for each user, calculating the demand estimate for the consumable specific to each user according to the managed state of use and providing a discount service to the user according to the calculated demand estimate.



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TITLE: Server apparatus, data processing apparatus, consumable management method, and memory medium and program therefor

----- KWIC -----

Current US Classification, US Primary Class/Subclass - CCPR (1):
705/14

Summary of Invention Paragraph - BSTX (3):

[0002] The present invention relates to a server apparatus and a data processing apparatus for providing a customer with discount service in the purchase of consumables to be used in an office equipment, a **toner cartridge** management method, and a memory medium and a program therefor.

Summary of Invention Paragraph - BSTX (8):

[0007] In practice, the user in a SOHO environment or the manager in an environment utilizing plural printing apparatus places an order to a personal computer shop or a **toner cartridge** dealer in consideration of the budget whenever cartridge replacement becomes necessary, and pays a charge determined by a fixed unit price for the **toner cartridge** and the number of cartridges.

Summary of Invention Paragraph - BSTX (9):

[0008] On the other hand, the **toner cartridge** dealer, even if wishing to provide a service of selling the **toner cartridge** with different discount rates depending upon the number of the cartridges used by the user, is in fact unable to provide such service as the number of cartridges for each user is not recognized.

Summary of Invention Paragraph - BSTX (10):

[0009] Also the user or the manager cannot benefit from such service unless he knows the discount rate in case of a collective purchase through the internet and he understands the number of cartridges to be purchased at a time

in consideration of the consumption thereof. Therefore the user or the manager has to execute precise management of the toner cartridges, thus retarding the expansion of such service, so that the levels of satisfaction on both sides cannot still be improved in mutual manner.

Summary of Invention Paragraph - BSTX (12):

[0010] In consideration of the foregoing, an object of the present invention is to provide a system allowing to manage the status of use of a consumable to be used in a printing apparatus, to calculate the estimate of demand according to such status of use and to provide a discount service linked with such estimate of demand, thereby facilitating the user to execute collective purchase matching the trend of consumption of the consumable and also enabling a collective purchase service including a discount service. The above-mentioned object can be attained, according to the present invention, by a server apparatus capable of managing, through the internet, information of a customer utilizing a data processing apparatus for managing toner cartridge information obtained through communication from a printing apparatus capable of recognizing a mounted state and a replacement state of a toner cartridge to be mounted, the server apparatus comprising management means for managing customer information by obtaining the toner cartridge information managed by the above-mentioned data processing apparatus, estimation means for calculating the estimate of demand for the toner cartridge by analyzing the toner cartridge information in the customer information managed by the management means, preparation means for preparing plural toner cartridge volume discount menus different from customer to customer, and information means for informing the data processing apparatus of the plural toner cartridge volume discount menus prepared by the preparation means.

Summary of Invention Paragraph - BSTX (13):

[0011] The aforementioned object can also be attained, according to the present invention, by a data processing apparatus comprising memory means for collecting and storing toner cartridge information based on toner cartridge control information informed from the printing apparatus, transfer means for transferring the toner cartridge information from the memory means to the server apparatus based on a toner cartridge information request from the server apparatus, obtaining means for obtaining toner cartridge volume discount

menus

informed from the server apparatus, display control means for displaying, in a display unit, the toner cartridge volume discount menus obtained by the obtaining means, designation means for designating one of the toner cartridge volume discount menus displayed for browsing by the display control means, and issuing means for issuing a toner cartridge volume discount purchase order to the server apparatus.

Brief Description of Drawings Paragraph - DRTX (7):

[0019] FIGS. 8 and 9 are views showing discount rates settable in a toner cartridge discount menu displayed in a manager apparatus in the server apparatus of the present invention;

Brief Description of Drawings Paragraph - DRTX (8):

[0020] FIGS. 10, 11, 12, 13, 14, 15, 16, 17 and 18 are views showing examples of the toner cartridge discount menu displayed on the manager apparatus in the server apparatus of the present invention;

Brief Description of Drawings Paragraph - DRTX (9):

[0021] FIG. 19 is a block diagram showing an example of a toner cartridge volume discount process by an image processing network system in which the server apparatus and the data processing apparatus of the present invention are applicable;

Detail Description Paragraph - DETX (52):

[0081] A developer unit 4 contains toner for visualizing a latent image formed on the photosensitive drum 1 in response to a laser beam corresponding to the image data. The developer 4 is provided with an unrepresented sensor for detecting a toner low level, thereby being capable of informing the printer engine control circuit 36 of a replacement request for a toner cartridge.

Detail Description Paragraph - DETX (64):

[0093] FIGS. 5 to 7 are views showing the demand estimating process which is proposed to the user at a volume discount service in the server apparatus (main server 101) of the present invention, generated therein and transmitted to the manager apparatus 103 of the user side, and showing examples of display on the display unit of such manager apparatus. The display is for example made in the

unit of a page. FIG. 5 corresponds to the result of estimate obtained from the number of replacements of the toner cartridge, and FIG. 6 corresponds to the result of estimate obtained from the cumulative number of purchase of the toner cartridges.

Detail Description Paragraph - DETX (65):

[0094] In the main server 101 shown in FIG. 1, upon receiving, from the manager information 103 through the internet 50, the information including at least the low toner information and the past toner replacement information informed from the printer controller 39 together with the user ID, there is recognized the number of replacement of the toner cartridges (photosensitive drum cartridges 41) for each model and each month, in the print systems 104(1) to 104(3) installed at the user. There is recognized the purchased number of the toner cartridges for each printer model at the user, and the number of toner cartridges held by the user is recognized from the aforementioned number of replacements of the toner cartridge and the number of the purchased toner cartridges. The term "recognize" means to store and manage the relevant data.

Detail Description Paragraph - DETX (66):

[0095] In such operation, the number of the toner cartridges to be purchased on the basis of the monthly averaged number of the toner cartridge replacements can be calculated by subtracting the monthly averaged number of the toner cartridge replacements from the number of toner cartridges held by the user for example at a month N. Therefore, the number of the toner cartridges to be purchased at a month (N+2) can be obtained by subtracting the monthly averaged number of the toner cartridges replacements multiplied by 2, from the number of the toner cartridges held by the user. Such estimating method corresponds to the "estimation from" in a section A in FIG. 7, and to a case where "from monthly averaged number of used cartridges" is instructed by the user interface.

Detail Description Paragraph - DETX (67):

[0096] On the other hand, the number of the toner cartridges to be purchased on the basis of the result of the toner cartridge replacements in the same month previous year can be obtained by subtracting the number of the toner cartridge replacements in the same month previous year from the number of the

toner cartridges held by the user at the month N.

Detail Description Paragraph - DETX (68):

[0097] For example, the number of the toner cartridges to be purchased until a month (N+2) can be calculated by subtracting the number of the toner cartridge replacements in a month (N+1) previous year from the number of the toner cartridges held by the user at the month N, and further subtracting the number of the toner cartridge replacements in a month (N+2) previous year. Such estimating method corresponds to the "estimation from" in a section A in FIG. 7, and to a case where "from number of used cartridges in the same month previous year" is instructed by the user interface. The result of use in the present invention will be explained later with reference to FIG. 5. In the present invention, the server apparatus can manage the number of toner cartridge replacements for each kind, and can calculate the demand estimate according to the number of toner cartridge replacements for each kind.

Detail Description Paragraph - DETX (74):

[0103] In FIG. 7, there are also shown buttons BT1 to BT3. In the following there will be explained, with reference to FIGS. 8 and 9, a discount rate that can be set on the toner cartridge discount menu.

Detail Description Paragraph - DETX (78):

[0107] FIGS. 8 and 9 show the discount rates settable in the toner cartridge discount menu presented to the manager apparatus in the server apparatus of the present invention. In FIG. 8, a section A shows an example of the discount rate according to the cumulative number of the toner cartridges for each model thereof. The user can purchase new cartridges with the discount rates shown in the table when the number of cartridges purchased reaches the numbers shown in the table for each model of the toner cartridge. A section B shows an example of the discount rate according to the cumulative purchased number of the total toner cartridges. The user can purchase new cartridges with the discount rate shown in the table, regardless of the model of the toner cartridge, when the total number of cartridges purchased reaches numbers shown in the table.

Detail Description Paragraph - DETX (79):

[0108] In FIG. 9, a section C shows an example of the discount rate according to the number of the purchased toner cartridges. The user can purchase new cartridges with the discount rates shown in the table according to

the number of cartridges for purchase for each model of the toner cartridge. A section D shows an example of the discount rate according to the total number of the purchased toner cartridges. The user can purchase new cartridges with the discount rates shown in the table according to the total number of cartridges for purchase regardless of the model of the toner cartridge. A section E shows an example of the discount rate according to the number of toner cartridges collected. The user can purchase new cartridges with the discount rates shown in the table according to the total number of the cartridges collected regardless of the model of the toner cartridge. The values of the discount rate are determined according to the conditions of numbers shown in the table. There can also be conceived a system of combining the sections A to E in FIGS. 8 and 9, for example providing discount rates combining those according to the cumulative number of the toner cartridges for each model shown in the section A and those according to the number of the recovered toner cartridges shown in the section E. The result of calculation of such discount rates may be presented at the manager apparatus 103 or at a terminal apparatus provided at each sales shop.

Detail Description Paragraph - DETX (80):

[0109] FIGS. 10 to 18 show an example of the toner cartridge discount menu presented to the manager apparatus in the server apparatus of the present invention.

Detail Description Paragraph - DETX (81):

[0110] In a state where an image shown in the section A in FIG. 10 is displayed on the manager apparatus 103 according to the toner cartridge discount menu presented from the main server 101, the user enters the number to be purchased for each cartridge type into the manager apparatus 103. The illustrated example shows a state of inputs of "5", "10" and "3" for the different types. Then, in response to the entry of information indicating the depression of a button BT11 to the manager apparatus 103, information indicating the input numbers is transmitted through the internet to the main server 101, which, in response, transmits image information shown in the section B in FIG. 10 and corresponding to the result calculated by the main server 101 according to the received information to the manager apparatus 103 through the internet, whereby the display on the display unit of the manager apparatus is switched. In this manner, the manager can be presented with the result of discount estimated for the number of the cartridges to be purchased. In this state, the display can return to the number setting image shown in the section A in FIG. 10, in response to the entry of information, indicating the

depression of a button BT13 into the manager apparatus 103. The number setting image shown in the section A in FIG. 10 may be restored by displaying image information as shown in the section A in FIG. 10, cached in advance in the manager apparatus or by requesting and obtaining image information as shown in the section A in FIG. 10 from the main server 101 through the internet.

Detail Description Paragraph - DETX (83):

[0112] Also, in the display state of the section B in FIG. 10, in response to the entry of information indicating the depression of a button BT14 into the manager apparatus 103, an image shown in FIG. 12 is displayed on the display unit of the manager apparatus 103. There is thus displayed statistics information showing the cumulative number of the purchased **toner cartridges** for each user. In this manner it is rendered possible to recognize the discount rate adopted for the aforementioned estimation of the discount, among set discount rates.

Detail Description Paragraph - DETX (88):

[0117] The **toner cartridge** discount menu process shown in FIGS. 10 to 15 have been explained by a simulation in which the manager executes estimations of various discounts by the ordinary menu process, but there may also be rendered selectable another menu shown in FIGS. 16 to 18 in addition to the menu shown in FIG. 10.

Detail Description Paragraph - DETX (91):

[0120] In this example, there can be arbitrarily set an upper limit for the purchase amount, an upper limit for the purchased number of the **toner cartridges** for each type, a lower limit for the purchased number of the **toner cartridges** for each type, and whether or not to apply the discount rate for the cumulative number of the purchased **toner cartridges** for each type. After the arbitrary setting of the search condition by the user, in response to the depression of a button BT27, an image recommending a result of estimation, corresponding to the taste of the use as shown in FIG. 18, is displayed on the manager apparatus 103.

Detail Description Paragraph - DETX (108):

[0137] In the following there will be explained, with reference to FIGS. 19, 20A and 20B, a **toner cartridge** volume discount process by the server

apparatus
and the data processing apparatus of the present invention.

Detail Description Paragraph - DETX (109):

[0138] FIG. 19 is a block diagram showing an example of the toner cartridge volume discount process by an image processing network system in which the server apparatus (corresponding to the main server 101 in FIG. 1) and the data processing apparatus (corresponding to the manager apparatus 103) of the present invention are applicable, wherein components same as those in FIG. 1 are represented by same numbers.

Detail Description Paragraph - DETX (110):

[0139] Referring to FIG. 19, a firewall 51 is present between the network and other networks to limit improper access request. An order taking system 52 of the dealer side is composed of an ordinary computer system, and is rendered capable of communication by the internet protocol and through the internet 50, with the main server 101 and the manager apparatus 103 of the user side. The present example corresponds to a system in which the main server 101 of the manufacturer side comprehensively manages the toner cartridge volume discount process of the user side.

Detail Description Paragraph - DETX (112):

[0141] At first, in response either to the reception of the low toner information by the manager apparatus 103(2) from any of the printer apparatus in the print systems 104(1) to 104(3) through the network 5, or to the reception of the cartridge replacement information, indicating the completed replacement of the toner cartridge from any of the printer apparatus, the manager apparatus 103(2) functioning as the toner cartridge count-up system counts, in a step (S1), the low toner information and the toner cartridge replacement information according to the ID of each printer. The customer information including the toner cartridge information, such as the toner cartridge replacements at least for each customer, is managed by a customer information storage 320 provided in the main server 101.

Detail Description Paragraph - DETX (113):

[0142] The manager apparatus 103(1) transmits the toner cartridge information, through the internet 50, to the main server 101, which, in response, the received information on the customer information storage 320.

Detail Description Paragraph - DETX (114):

[0143] Then, in a step (S2), a reception system 52 of the dealer side receives, through the internet 50, plural toner cartridge volume discount menus prepared for respective customers in a main server 505. Then, according to a predetermined time schedule, such plural toner cartridge volume discount menus are transmitted to the manager apparatus 103(1) through the internet 50.

Detail Description Paragraph - DETX (115):

[0144] Then, in a step (S3), the received toner cartridge volume discount menus are browsed to determine the actual number and timing of the purchase of the toner cartridges, and the thus determined number and timing of purchase of the toner cartridges are transmitted, as order information, from the manager apparatus 103(1) to the order taking system 52 through the internet 50.

Detail Description Paragraph - DETX (116):

[0145] Then, in a step (S4), upon delivery of the toner cartridges from the dealer to the customer by a delivery service or by a sales personnel, the remaining number of the toner cartridges etc. on the storage 320 is renewed, and transaction information indicating the order taking and delivery is transmitted from the manager apparatus 103(1) to the main server 101 through the internet 50, whereupon the process is terminated. At the delivery of the toner cartridges from the dealer by the delivery service or the sales personnel, there is executed the recovery of the used toner cartridges.

Detail Description Paragraph - DETX (117):

[0146] On the other hand, in response to the transmission of the toner cartridge information from the manager apparatus 103(1), the main server 101 receives, in a step (S11), such toner cartridge information by identifying the user by the IP address and the model information.

Detail Description Paragraph - DETX (118):

[0147] Then, in a step (S12), the main server 101 analyzes the customer information stored in the customer information storage 320 and the received toner cartridge information, and executes the estimation of the number and timing of the toner cartridges to be ordered by the user, based on the aforementioned demand estimate process.

Detail Description Paragraph - DETX (119):

[0148] Then, in a step (S13), the main server 101 generates plural toner cartridge volume discount menus by combining the calculated number and timing of the order of the toner cartridges with the cumulative number and timings of past purchases and transmits such menus to the reception system 52 of the dealer side through the internet 50. Thereafter, such plural toner cartridge volume discount menus are transmitted to the manager apparatus 103(1) through the internet 50 according a predetermined time schedule.

Detail Description Paragraph - DETX (120):

[0149] Then, in a step (S14), the customer information, such as the quantity of the toner cartridges held by each user, managed in the customer information storage 320 is updated according to the order taking/delivery information transmitted from the reception system 52 of the dealer side or the manager apparatus 103(1), whereupon the process is terminated.

Detail Description Paragraph - DETX (121):

[0150] According to the above-described embodiment, the main server 101 can automatically generate the toner cartridge purchase plan, which is to be prepared by the user of the manager apparatus side by recognizing the actual state of consumption of the toner cartridges, utilizing the low toner information and the toner cartridge replacement information generated in the print systems and transmitted through the internet, thereby providing a service useful for the purchase plan of the toner cartridges in exact and timely manner.

Detail Description Paragraph - DETX (122):

[0151] More specifically, it is rendered possible to prepare toner cartridge volume discount menus including a toner cartridge discount for a volume purchase, for a properly registered customer, based on the obtained customer information, thereby assisting the collective purchase plan in consideration of the budget of the manager and significantly alleviating the burden of the manager of the print systems in the toner cartridge management.

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Detail Description Paragraph - DETX (126):

[0155] FIG. 21 is a block diagram showing the configuration of a print process system in which the server apparatus, print apparatus and data processing apparatus of a second embodiment of the present invention are applicable, wherein components same as those in FIG. 1 are represented by same numbers. The first and second embodiments are same except that the function of the management system, within the functions of the main server 101, namely the process of generating the toner cartridge discount menu including the toner cartridge volume discount for the properly registered user, based on the obtained customer information, is executed by the order taking system 52.

Detail Description Paragraph - DETX (128):

[0157] Then the manager apparatus 103(2) functioning as the toner cartridge count-up system informs the management system of the sales (dealer) shop of the counted information through the internet 50. The management system 52A executes estimation of the optimum number and timing of the toner cartridges to be ordered by the user, based on the information from the manager apparatus 103(2) constituting the toner cartridge count-up system of the user side and the information informed from the toner cartridge count-up system 101A and accumulated in the past.

Detail Description Paragraph - DETX (129):

[0158] Then the management system 52A of the sales shop generates a volume discount menu by combining the thus estimated number/timing and the cumulative number/timing of the toner cartridges purchased by the user in the past.

Detail Description Paragraph - DETX (130):

[0159] Then an order taking system 52B of the sales shop informs the estimated volume discount menu to the person of the user in charge of the toner cartridge purchase, through the internet 50. Then the person in charge places an order for the toner cartridges based on the information informed from the order taking system 52B of the sales shop.

Detail Description Paragraph - DETX (131):

[0160] Then the sales shop delivers the ordered toner cartridges to the user

and recovers the used toner cartridges. Then the management system 52A of the sales shop informs, through the internet 50, the count-up system 101A in the main server 101 of the manufacturer side of the number of cartridges held by the user, the number ordered and the estimated timing of cartridge ordering.

Detail Description Paragraph - DETX (133):

[0162] In the foregoing first embodiment, there has been explained a system in which the main server 101 functions as the management system, but it is also possible to execute the services such as the toner cartridge management and the toner cartridge discount on the web.

Detail Description Paragraph - DETX (134):

[0163] FIG. 22 is a block diagram showing the configuration of a print process system in which the server apparatus, print apparatus and data processing apparatus of a third embodiment of the present invention are applicable, wherein components same as those in FIG. 1 are represented by same numbers. The first and third embodiments are different in that the process of generating the toner cartridge discount menu including the toner cartridge volume discount for the properly registered user, based on the obtained customer information, is executed on the web. In FIG. 22, there is also shown an ordering system 53C.

Detail Description Paragraph - DETX (136):

[0165] Then the manager apparatus 103(2) functioning as the toner cartridge count-up system informs the manager system 103(1) of the counted information.

Detail Description Paragraph - DETX (138):

[0167] The management system 53A on the web executes estimation of the optimum number and timing of the toner cartridges to be ordered by the user, based on the information from the manager apparatus 103(1) of the user side and the information informed therefrom and accumulated in the past.

Detail Description Paragraph - DETX (139):

[0168] Then the management system 53A on the web generates a volume discount

menu by combining the thus estimated number/timing and the cumulative number/timing of the toner cartridges purchased by the user in the past.

Detail Description Paragraph - DETX (140):

[0169] Then an order taking system 53B on the web informs the estimated volume discount menu to the manager apparatus 103(1) of the user, through the internet 50. Then the manager apparatus 103(1) places an order for the toner cartridges based on the information informed from the order taking system 53C on the web and utilizing the ordering system 53B on the web.

Detail Description Paragraph - DETX (141):

[0170] Then the order taking system 53B on the web informs a sales shop of the quantity/timing ordered by the user, and the sales shop delivers the ordered toner cartridges to the user and recovers the used toner cartridges.

Detail Description Paragraph - DETX (144):

[0173] In the foregoing, there have been explained cases where the present invention is applied to a print system utilizing a toner cartridge, properly supplied by the manufacturer and provided with a non-volatile memory 42 as shown in FIG. 4. In such proper toner cartridge equipped with the non-volatile memory 42, upon mounting on the main body of the printer, a flat indicating the mounting on the printer is set in such non-volatile memory 42, so that the number of replacement of the toner cartridge is not counted excessively but regarded as "1" even in case the same toner cartridge is removed from the main body and mounted again, but, in a toner cartridge without the non-volatile memory 42, if once extracted from the main body, the number of replacement of the toner cartridge is counted up so that the basic parameter to be used in the volume discount menu becomes erroneous and a large error is generated in the demand estimation.

Detail Description Paragraph - DETX (145):

[0174] In the present embodiment, therefore, the number of replacements of the toner cartridge is judged incorrect in case the difference between the cumulative number of purchase of the toner cartridges and the number of replacements thereof becomes negative, and, in such case there is presented to the user a request for entering the number of toner cartridges in inventory and the number of replacement of the toner cartridges is obtained from the entered number and the cumulative number of purchase of the toner cartridges thereby suppressing the error in estimation. The menu in such embodiment will be

explained in the following.

Detail Description Paragraph - DETX (147):

[0176] A count button BT30 is used for entering the number of **toner cartridges** in inventory, and a button BT31 is used for establishing the number in inventory while a button BT32 is used for canceling such number in inventory.

Detail Description Paragraph - DETX (148):

[0177] In case the number of replacements of the **toner cartridge** is judged incorrect from a fact that the difference between the cumulative number of purchase of the **toner cartridges** and the number of replacements of the **toner cartridge** becomes negative, there is presented to the user a request for entering the number of **toner cartridges** in inventory, and the number of replacements of the **toner cartridge** is obtained from the entered number and the cumulative number of purchase of the **toner cartridges** thereby suppressing the error in estimation.

Detail Description Paragraph - DETX (151):

[0180] FIG. 24 is a view showing an example of a registration menu for designating the date and time for providing the volume discount service, the state of use of **toner cartridges** and the demand estimate in a print process system in which the server apparatus, print apparatus and data processing apparatus of a fifth embodiment of the present invention are applicable. Such menu is displayed on the display device of the manager apparatus 103(1) shown in FIG. 1 by a service program installed therein.

Detail Description Paragraph - DETX (164):

[0193] The foregoing embodiments have been explained by taking the **toner cartridge** as an example, but the present invention is not limited to such example and is applicable also to all the consumables such as ink cartridge, photosensitive drum cartridge, recording sheet etc.

Detail Description Paragraph - DETX (165):

[0194] According to the server apparatus, **toner cartridge** management method and memory medium of the present invention, as explained in the foregoing, there are executed to manage the customer information by obtaining the **toner**

cartridge information managed by the data process apparatus, to calculate the demand estimate for the toner cartridge by analyzing the toner cartridge information in the managed customer information, to generate plural toner cartridge volume discount menus respectively different for the users based on thus calculated demand estimate of the toner cartridge and to inform the data processing apparatus of such plural toner cartridge volume discount menus, whereby the toner cartridge purchase plan, which is to be prepared by the user of the manager apparatus side by recognizing the actual state of consumption of the toner cartridges can be automatically generated, utilizing the low toner information and the toner cartridge replacement information generated in the print systems and transmitted through the internet, thereby providing a service useful for the purchase plan of the toner cartridges in exact and timely manner.

Detail Description Paragraph - DETX (166):

[0195] Consequently, it is rendered possible to prepare toner cartridge volume discount menus including a toner cartridge discount for a volume purchase, for a properly registered customer, based on the obtained customer information, thereby assisting the collective purchase plan in consideration of the budget of the manager and significantly alleviating the burden of the manager of the print systems in the toner cartridge management.

Detail Description Paragraph - DETX (167):

[0196] Also according to the server apparatus, toner cartridge management method and memory medium of the present invention, as explained in the foregoing, there are executed to collect and store the toner cartridge information based on the toner cartridge control information informed from the print apparatus, to transfer the toner cartridge information stored in the memory means to the server apparatus based on the request from the server apparatus for obtaining the toner cartridge information, then to obtain the toner cartridge volume discount menu informed from the server apparatus, to display the obtained toner cartridge volume discount menu on the display unit for browsing, to designate the displayed toner cartridge volume discount menu and to issue the order for purchasing the toner cartridge volume discount according to such designation to the server apparatus, whereby the toner cartridge purchase plan, which is to be prepared by the user of the manager apparatus side by recognizing the actual state of consumption of the toner cartridges can be automatically generated, utilizing the low toner information and the toner cartridge replacement information generated in the print systems and transmitted through the internet, thereby providing a service useful for the purchase plan of the toner cartridges in exact and timely manner.

Detail Description Paragraph - DETX (168):

[0197] Consequently, it is rendered possible to prepare toner cartridge volume discount menus including a toner cartridge discount for a volume purchase, for a properly registered customer, based on the obtained customer information, thereby assisting the collective purchase plan in consideration of the budget of the manager and significantly alleviating the burden of the manager of the print systems in the toner cartridge management.

Claims Text - CLTX (2):

1. A server apparatus capable of managing, through internet, customer information utilizing a data processing apparatus for managing toner cartridge information obtained by communication with a printing apparatus capable of recognizing a mount state and a replacement state of a toner cartridge mounted thereon, the server apparatus comprising: management means for managing the customer information by obtaining said toner cartridge information managed by said data processing apparatus; estimation means for calculating a demand estimate for the toner cartridge by analyzing said toner cartridge information in the customer information managed by said management means; generation means for generating plural toner cartridge volume discount menus respectively different for the customers, based on the demand estimate for the toner cartridge calculated by said estimation means; and informing means for informing said data processing apparatus of the plural toner cartridge volume discount menus generated by said generation means.

Claims Text - CLTX (3):

2. A server apparatus according to claim 1, further comprising: obtaining means for obtaining an order request entered from said data processing apparatus according to any of the toner cartridge volume discount menus informed by said informing means; and renewal means for renewing said toner cartridge information in said customer information, based on the order request obtained by said obtaining means.

Claims Text - CLTX (4):

3. A server apparatus according to claim 1, wherein said generation means generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the cumulative number of purchase for each toner cartridge model, based on the demand estimate

for the toner cartridge calculated by said estimation means.

Claims Text - CLTX (5):

4. A server apparatus according to claim 1, wherein said generation means generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the total cumulative number of purchase of the toner cartridge, based on the demand estimate for the toner cartridge calculated by said estimation means.

Claims Text - CLTX (6):

5. A server apparatus according to claim 1, wherein said generation means generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the number of purchase for each toner cartridge model, based on the demand estimate for the toner cartridge calculated by said estimation means.

Claims Text - CLTX (7):

6. A server apparatus according to claim 1, wherein said generation means generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the total number of purchase for the toner cartridge, based on the demand estimate for the toner cartridge calculated by said estimation means.

Claims Text - CLTX (8):

7. A server apparatus according to claim 1, wherein said generation means generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the number of recovered toner cartridge, based on the demand estimate for the toner cartridge calculated by said estimation means.

Claims Text - CLTX (9):

8. A server apparatus according to claim 1, wherein said generation means generates a toner cartridge volume discount menu to be recommended to each user, based on the demand estimate for the toner cartridge calculated by said estimation means.

Claims Text - CLTX (10):

9. A server apparatus according to claim 1, wherein said estimation means executes a predetermined corrective calculation in the demand estimation for the **toner cartridge**, based on the result of analysis of said **toner cartridge** information in the customer information managed by said management means.

Claims Text - CLTX (11):

10. A server apparatus according to claim 1, wherein said informing means informs said data processing apparatus, at designated date and time, of the plural **toner cartridge** volume discount menus generated by said generation means.

Claims Text - CLTX (12):

11. A data processing apparatus capable of informing a server apparatus, through internet, of **toner cartridge** information obtained by communication with a printing apparatus capable of recognizing a mount state and a replacement state of a **toner cartridge** mounted thereon, the data processing apparatus comprising: memory means for collecting and storing the **toner cartridge** information based on **toner cartridge** control information informed from said print apparatus; transfer means for transferring said **toner cartridge** information stored in said memory means to said server apparatus; obtaining means for obtaining a **toner cartridge** volume discount menu informed from said server apparatus; display control means for causing a display unit to display for browsing the **toner cartridge** volume discount menu obtained by said obtaining means; designation means for designating the **toner cartridge** volume discount menu displayed for browsing by said display control means; and issuing means for issuing a request for purchase of the **toner cartridge** volume discount to said server apparatus, according to the designation by said designation means.

Claims Text - CLTX (13):

12. A **toner cartridge** management method for use in a server apparatus capable of managing, through internet, customer information utilizing a data processing apparatus for managing **toner cartridge** information obtained by communication with a printing apparatus capable of recognizing a mount state and a replacement state of a **toner cartridge** mounted thereon, the method comprising: a management step of managing the customer information by obtaining said **toner cartridge** information managed by said data processing apparatus; an

estimation step of calculating a demand estimate for the toner cartridge by analyzing said toner cartridge information in the customer information managed by said management step; a generation step of generating plural toner cartridge volume discount menus respectively different for the customers, based on the demand estimate for the toner cartridge calculated by said estimation step; and an informing step of informing said data processing apparatus of the plural toner cartridge volume discount menus generated by said generation step.

Claims Text - CLTX (14):

13. A method according to claim 12, further comprising: an obtaining step of obtaining an order request entered from said data processing apparatus according to any of the toner cartridge volume discount menus informed by said informing step; and a renewal step of renewing said toner cartridge information in said customer information, based on the order request obtained by said obtaining step.

Claims Text - CLTX (15):

14. A method according to claim 12, wherein said generation step generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the cumulative number of purchase for each toner cartridge model, based on the demand estimate for the toner cartridge calculated by said estimation step.

Claims Text - CLTX (16):

15. A method according to claim 12, wherein said generation step generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the total cumulative number of purchase of the toner cartridge, based on the demand estimate for the toner cartridge calculated by said estimation step.

Claims Text - CLTX (17):

16. A method according to claim 12, wherein said generation step generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the number of purchase for each toner cartridge model, based on the demand estimate for the toner cartridge calculated by said estimation step.

Claims Text - CLTX (18):

17. A method according to claim 12, wherein said generation step generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the total number of purchase for the toner cartridge, based on the demand estimate for the toner cartridge calculated by said estimation step.

Claims Text - CLTX (19):

18. A method according to claim 12, wherein said generation step generates plural toner cartridge volume discount menus respectively different for the users and derived with a discount rate according to the number of recovered toner cartridge, based on the demand estimate for the toner cartridge calculated by said estimation step.

Claims Text - CLTX (20):

19. A method according to claim 12, wherein said generation step generates a toner cartridge volume discount menu to be recommended to each user, based on the demand estimate for the toner cartridge calculated by said estimation step.

Claims Text - CLTX (21):

20. A method according to claim 12, wherein said estimation step executes a predetermined corrective calculation in the demand estimation for the toner cartridge, based on the result of analysis of said toner cartridge information in the customer information managed by said management step.

Claims Text - CLTX (22):

21. A method according to claim 12, wherein said informing step informs said data processing apparatus, at designated date and time, of the plural toner cartridge volume discount menus generated by said generation step.

Claims Text - CLTX (23):

22. A toner cartridge management method for use in a data processing apparatus capable of informing a server apparatus, through internet, of toner cartridge information obtained by communication with a printing apparatus capable of recognizing a mount state and a replacement state of a toner cartridge mounted thereon, the method comprising: a memory step of collecting and storing the toner cartridge information based on toner cartridge control information informed from said print apparatus; a transfer step of

transferring said toner cartridge information stored in said memory means to said server apparatus; an obtaining step of obtaining a toner cartridge volume discount menu informed from said server apparatus; a display control step of causing a display unit to display for browsing the toner cartridge volume discount menu obtained by said obtaining step; a designation step of designating the toner cartridge volume discount menu displayed for browsing by said display control step; and an issuing step of issuing a request for purchase of the toner cartridge volume discount to said server apparatus, according to the designation by said designation step.

Claims Text - CLTX (24):

23. A computer readable memory medium storing a program for causing a server apparatus capable of managing, through internet, customer information utilizing a data processing apparatus for managing toner cartridge information obtained by communication with a printing apparatus capable of recognizing a mount state and a replacement state of a toner cartridge mounted thereon, the program comprising: a management step of managing the customer information by obtaining said toner cartridge information managed by said data processing apparatus; an estimation step of calculating a demand estimate for the toner cartridge by analyzing said toner cartridge information in the customer information managed by said management step; a generation step of generating plural toner cartridge volume discount menus respectively different for the customers, based on the demand estimate for the toner cartridge calculated by said estimation step; and an informing step of informing said data processing apparatus of the plural toner cartridge volume discount menus generated by said generation step.

Claims Text - CLTX (25):

24. A computer readable memory medium storing a program for causing a data processing apparatus capable of informing a server apparatus, through internet, of toner cartridge information obtained by communication with a printing apparatus capable of recognizing a mount state and a replacement state of a toner cartridge mounted thereon, the program comprising: a memory step of collecting and storing the toner cartridge information based on toner cartridge control information informed from said print apparatus; a transfer step of transferring said toner cartridge information stored in said memory means to said server apparatus; an obtaining step of obtaining a toner cartridge volume

discount menu informed from said server apparatus; a display control step of causing a display unit to display for browsing the toner cartridge volume discount menu obtained by said obtaining step; a designation step of designating the toner cartridge volume discount menu displayed for browsing by said display control step; and an issuing step of issuing a request for purchase of the toner cartridge volume discount to said server apparatus, according to the designation by said designation step.